SEQUENCE LISTING

<110> INCYTE PHARMACEUTICALS, INC.
AU-YOUNG, Janice
LAL, Preeti
BANDMAN, Olga
REDDY, Roopa
BAUGHN, Mariah R.
YUE, Henry
HILLMAN, Jennifer L.

<120> HUMAN CARBOHYDRATE-ASSOCIATED PROTEINS

<130> PF-0604 USN

<140> 09/806,277
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<150> PCT/US99/22685
<151> 1999-09-29

<150> US 60/240,934
<151> 1998-12-03

<150> US 09/205,656
<151> 1998-12-03

<150> US 60/155,227
<151> 1998-11-13

<150> US 60/155,266
<151> 1998-10-06

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<151> 1998-10-01

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Val Tyr Phe Pro Arg Leu Ile Val Pro Phe Cys Gly His Ile Lys
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Gly Gly Met Arg Pro Gly Lys Lys Val Leu Val Met Gly Ile Val
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Asp Leu Asn Pro Glu Ser Phe Ala Ile Ser Leu Thr Cys Gly Asp
                  65                  70                  75
Ser Glu Asp Pro Pro Ala Asp Val Ala Ile Glu Leu Lys Ala Val
                  80                  85                  90
Phe Thr Asp Arg Gln Leu Leu Arg Asn Ser Cys Ile Ser Gly Glu
                  95                 100                 105
Arg Gly Glu Glu Gln Ser Ala Ile Pro Tyr Phe Pro Phe Ile Pro
                 110                 115                 120
Asp Gln Pro Phe Arg Val Glu Ile Leu Cys Glu His Pro Arg Phe
                 125                 130                 135
Arg Val Phe Val Asp Gly His Gln Leu Phe Asp Phe Tyr His Arg
                 140                 145                 150
Ile Gln Thr Leu Ser Ala Ile Asp Thr Ile Lys Ile Asn Gly Asp
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Leu Gln Ile Thr Lys Leu
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                 20                  25                  30
Pro Pro Ala Ala Pro Ala Pro Gly Glu Asp Asn Pro Ala Gly Ala
                 35                  40                  45
Gly Gly Ala Ala Val Ala Gly Ala Ala Gly Gly Ala Arg Arg Phe
                 50                  55                  60
Leu Cys Gly Val Val Glu Gly Phe Tyr Gly Arg Pro Trp Val Met
                 65                  70                  75
Glu Gln Arg Lys Glu Leu Phe Arg Arg Leu Gln Lys Trp Glu Leu
                 80                  85                  90
Asn Thr Tyr Leu Tyr Ala Pro Lys Asp Asp Tyr Lys His Arg Met
                 95                 100                 105
Phe Trp Arg Glu Met Tyr Ser Val Glu Glu Ala Glu Gln Leu Met
                110                 115                 120
Thr Leu Ile Ser Ala Ala Arg Glu Tyr Glu Ile Glu Phe Ile Tyr
                125                 130                 135
Ala Ile Ser Pro Gly Leu Asp Ile Thr Phe Ser Asn Pro Lys Glu
                140                 145                 150
Val Ser Thr Leu Lys Arg Lys Leu Asp Gln Val Ser Gln Phe Gly
                155                 160                 165
Cys Arg Ser Phe Ala Leu Leu Phe Asp Asp Ile Asp His Asn Met
                170                 175                 180
Cys Ala Ala Asp Lys Glu Val Phe Ser Ser Phe Ala His Ala Gln
                185                 190                 195
Val Ser Ile Thr Asn Glu Ile Tyr Gln Tyr Leu Gly Glu Pro Glu
                200                 205                 210
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Thr Phe Leu Phe Cys Pro Thr Glu Tyr Cys Gly Thr Phe Cys Tyr
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Pro Asn Val Ser Gln Ser Pro Tyr Leu Arg Thr Val Gly Glu Lys
                230                 235                 240
Leu Leu Pro Gly Ile Glu Val Leu Trp Thr Gly Pro Lys Val Val
                245                 250                 255
Ser Lys Glu Ile Pro Val Glu Ser Ile Glu Glu Val Ser Lys Ile
                260                 265                 270
Ile Lys Arg Ala Pro Val Ile Trp Asp Asn Ile His Ala Asn Asp
                275                 280                 285
Tyr Asp Gln Lys Arg Leu Phe Leu Gly Pro Tyr Lys Gly Arg Ser
                290                 295                 300
Thr Glu Leu Ile Pro Arg Leu Lys Gly Val Leu Thr Asn Pro Asn
                305                 310                 315
Cys Glu Phe Glu Ala Asn Tyr Val Ala Ile His Thr Leu Ala Thr
                320                 325                 330
Trp Tyr Lys Ser Asn Met Asn Gly Val Arg Lys Asp Val Val Met
                335                 340                 345
Thr Asp Ser Glu Asp Ser Thr Val Ser Ile Gln Ile Lys Leu Glu
                350                 355                 360
Asn Glu Gly Ser Asp Glu Asp Ile Glu Thr Asp Val Leu Tyr Ser
                365                 370                 375
Pro Gln Met Ala Leu Lys Leu Ala Leu Thr Glu Trp Leu Gln Glu
                380                 385                 390
Phe Gly Val Pro His Gln Tyr Ser Ser Arg Gln Val Ala His Ser
                395                 400                 405
Gly Ala Lys Ala Ser Val Val Asp Gly Thr Pro Leu Val Ala Ala
                410                 415                 420
Pro Ser Leu Asn Ala Thr Thr Val Val Thr Thr Val Tyr Gln Glu
                425                 430                 435
Pro Ile Met Ser Gln Gly Ala Ala Leu Ser Gly Glu Pro Thr Thr
                440                 445                 450
Leu Thr Lys Glu Glu Glu Lys Lys Gln Pro Asp Glu Glu Pro Met
                455                 460                 465
Asp Met Val Val Glu Lys Gln Glu Glu Thr Asp His Lys Asn Asp
                470                 475                 480
Asn Gln Ile Leu Ser Glu Ile Val Glu Ala Lys Met Ala Glu Glu
                485                 490                 495
Leu Lys Pro Met Asp Thr Asp Lys Glu Ser Ile Ala Glu Ser Lys
                500                 505                 510
Ser Pro Glu Met Ser Met Gln Glu Asp Cys Ile Ser Asp Ile Ala
                515                 520                 525
Pro Met Gln Thr Asp Glu Gln Thr Asn Lys Glu Gln Phe Val Pro
                530                 535                 540
Gly Pro Asn Glu Lys Pro Leu Tyr Thr Ala Glu Pro Val Thr Leu
                545                 550                 555
Glu Asp Leu Gln Leu Leu Ala Asp Leu Phe Tyr Leu Pro Tyr Glu
                560                 565                 570
His Gly Pro Lys Gly Ala Gln Met Leu Arg Glu Phe Gln Trp Leu
                575                 580                 585
Arg Ala Asn Ser Ser Val Val Ser Val Asn Cys Lys Gly Lys Asp
                590                 595                 600
Ser Glu Lys Ile Glu Glu Trp Arg Ser Arg Ala Ala Lys Phe Glu
                605                 610                 615
Glu Met Cys Gly Leu Val Met Gly Met Phe Thr Arg Leu Ser Asn
                620                 625                 630
Cys Ala Asn Arg Thr Ile Leu Tyr Asp Met Tyr Ser Tyr Val Trp
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35 40 45
Ile Ala Cys Arg Ser Gly Pro Thr Trp Trp Gly Pro Gln Arg Leu
50 55 60
Asn Ser Gly Gly Arg Trp Asp Ser Glu Val Met Ala Ser Thr Val
65 70 75
Val Lys Tyr Leu Ser Gln Glu Glu Ala Gln Ala Val Asp Gln Glu
80 85 90
Leu Phe Asn Glu Tyr Gln Phe Ser Val Asp Gln Leu Met Glu Leu
95 100 105
Ala Gly Leu Ser Cys Ala Thr Ala Ile Ala Lys Ala Tyr Pro Pro
110 115 120
Thr Ser Met Ser Arg Ser Pro Pro Thr Val Leu Val Ile Cys Gly
125 130 135
Pro Gly Asn Asn Gly Gly Asp Gly Leu Val Cys Ala Arg His Leu
140 145 150
Lys Leu Phe Gly Tyr Glu Pro Thr Ile Tyr Tyr Pro Lys Arg Pro
155 160 165
Asn Lys Pro Leu Phe Thr Ala Leu Val Thr Gln Cys Gln Lys Met
170 175 180
Asp Ile Pro Phe Leu Gly Glu Met Pro Ala Glu Pro Met Thr Ile
185 190 195
Asp Glu Leu Tyr Glu Leu Val Val Asp Ala Ile Phe Gly Phe Ser
200 205 210
Phe Lys Gly Asp Val Arg Glu Pro Phe His Ser Ile Leu Ser Val
215 220 225
Leu Lys Gly Leu Thr Val Pro Ile Ala Ser Ile Asp Ile Pro Ser
230 235 240
Gly Trp Asp Val Glu Lys Gly Asn Ala Gly Gly Ile Gln Pro Asp
245 250 255
Leu Leu Ile Ser Leu Thr Ala Pro Lys Lys Ser Ala Thr Gln Phe
260 265 270
Thr Gly Arg Tyr His Tyr Leu Gly Gly Arg Phe Val Pro Pro Ala
275 280 285
Leu Glu Lys Lys Tyr Gln Leu Asn Leu Pro Pro Tyr Pro Asp Thr
290 295 300
Glu Cys Val Tyr Arg Leu Gln

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<212> PRT
<213> Homo sapiens

<220>
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<400> 4

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Met Val His Tyr Ile Tyr Gln Arg Phe Arg Val Leu Glu Gln Gly
                35                  40                  45
Leu Glu Lys Cys Thr Gln Ala Thr Arg Ala Tyr Ile Gln Glu Phe
                50                  55                  60
Gln Glu Phe Ser Lys Asn Ile Ser Val Met Leu Gly Arg Cys Gln
                65                  70                  75
Thr Tyr Thr Ser Glu Tyr Lys Ser Ala Val Gly Asn Leu Ala Leu
                80                  85                  90
Arg Val Glu Arg Ala Gln Arg Glu Ile Asp Tyr Ile Gln Tyr Leu
                95                 100                 105
Arg Glu Ala Asp Glu Cys Ile Glu Ser Glu Asp Lys Thr Leu Ala
               110                 115                 120
Glu Met Leu Leu Gln Glu Ala Glu Glu Glu Lys Lys Ile Arg Thr
               125                 130                 135
Leu Leu Asn Ala Ser Cys Asp Asn Met Leu Met Gly Ile Lys Ser
               140                 145                 150
Leu Lys Ile Val Lys Lys Met Met Asp Thr His Gly Ser Trp Met
               155                 160                 165
Lys Asp Ala Val Tyr Asn Ser Pro Lys Val Tyr Leu Leu Ile Gly
               170                 175                 180
Ser Arg Asn Asn Thr Val Trp Glu Phe Ala Asn Ile Arg Ala Phe
               185                 190                 195
Met Glu Asp Asn Thr Lys Pro Ala Pro Arg Lys Gln Ile Leu Thr
               200                 205                 210
Leu Ser Trp Gln Gly Thr Gly Gln Val Ile Tyr Lys Gly Phe Leu
               215                 220                 225
Phe Phe His Asn Gln Ala Thr Ser Asn Glu Ile Ile Lys Tyr Asn
               230                 235                 240
Leu Gln Lys Arg Thr Val Glu Asp Arg Met Leu Leu Pro Gly Gly
               245                 250                 255
Val Gly Arg Ala Leu Val Tyr Gln His Ser Pro Ser Thr Tyr Ile
               260                 265                 270
Asp Leu Ala Val Asp Glu His Gly Leu Trp Ala Ile His Ser Gly
               275                 280                 285
Pro Gly Thr His Ser His Leu Val Leu Thr Lys Ile Glu Pro Gly
               290                 295                 300
Thr Leu Gly Val Glu His Ser Trp Asp Thr Pro Cys Arg Ser Gln
               305                 310                 315
Asp Ala Glu Ala Ser Phe Leu Leu Cys Gly Val Leu Tyr Val Val
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                320                 325                 330
Tyr Ser Thr Gly Gly Gln Gly Pro His Arg Ile Thr Cys Ile Tyr
                335                 340                 345
Asp Pro Leu Gly Thr Ile Ser Glu Glu Asp Leu Pro Asn Leu Phe
                350                 355                 360
Phe Pro Lys Arg Pro Arg Ser His Ser Met Ile His Tyr Asn Pro
                365                 370                 375
Arg Asp Lys Gln Leu Tyr Ala Trp Asn Glu Gly Asn Gln Ile Thr
                380                 385                 390
Tyr Lys Leu Gln Thr Lys Arg Lys Leu Pro Leu Lys
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                 35                  40                  45
Asn His Ala Ser Val Gly Pro Thr Leu Gln Thr Thr Ser Val Ser
                 50                  55                  60
Pro Asp Pro Thr Arg Glu Ser Val Leu Gln Pro Ser Pro Gln Val
                 65                  70                  75
Pro Ala Thr Thr Val Ala His Thr Ala Thr Gln Gln Pro Ala Ala
                 80                  85                  90
Pro Ala Pro Pro Ala Val Ser Pro Arg Glu Ala Leu Met Glu Ala
                 95                 100                 105
Met His Thr Val Pro Val Pro Pro Thr Thr Val Arg Thr Asp Ser
                110                 115                 120
Leu Gly Lys Asp Ala Pro Ala Gly Trp Gly Thr Thr Pro Ala Ser
                125                 130                 135
Pro Thr Leu Ser Pro Glu Glu Glu Asp Asp Ile Arg Asn Val Ile
                140                 145                 150
Gly Arg Cys Lys Asp Thr Leu Ser Thr Ile Thr Gly Pro Thr Thr
                155                 160                 165
Gln Asn Thr Tyr Gly Arg Asn Glu Gly Ala Trp Met Lys Asp Pro
                170                 175                 180
Leu Ala Lys Asp Glu Arg Ile Tyr Val Thr Asn Tyr Tyr Tyr Gly
                185                 190                 195
Asn Thr Leu Val Glu Phe Arg Asn Leu Glu Asn Phe Lys Gln Gly
                200                 205                 210
Arg Trp Ser Asn Ser Tyr Lys Leu Pro Tyr Ser Trp Ile Gly Thr
                215                 220                 225
Gly His Val Val Tyr Asn Gly Ala Phe Tyr Tyr Asn Arg Ala Phe
                230                 235                 240
Thr Arg Asn Ile Ile Lys Tyr Asp Leu Lys Gln Arg Tyr Val Ala
                245                 250                 255
```

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Ala Trp Ala Met Leu His Asp Val Ala Tyr Glu Glu Ala Thr Pro
                260                 265                 270
Trp Arg Trp Gln Gly His Ser Asp Val Asp Phe Ala Val Asp Glu
                275                 280                 285
Asn Gly Leu Trp Leu Ile Tyr Pro Ala Leu Asp Asp Glu Gly Phe
                290                 295                 300
Ser Gln Glu Val Ile Val Leu Ser Lys Leu Asn Ala Ala Asp Leu
                305                 310                 315
Ser Thr Gln Lys Glu Thr Thr Trp Arg Thr Gly Leu Arg Arg Asn
                320                 325                 330
Phe Tyr Gly Asn Cys Phe Val Ile Cys Gly Val Leu Tyr Ala Val
                335                 340                 345
Asp Ser Tyr Asn Gln Arg Asn Ala Asn Ile Ser Tyr Ala Phe Asp
                350                 355                 360
Thr His Thr Asn Thr Gln Ile Val Pro Arg Leu Leu Phe Glu Asn
                365                 370                 375
Glu Tyr Ser Tyr Thr Thr Gln Ile Asp Tyr Asn Pro Lys Asp Arg
                380                 385                 390
Leu Leu Tyr Ala Trp Asp Asn Gly His Gln Val Thr Tyr His Val
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Ile Phe Ala Tyr
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                 20                  25                  30
Asp Ala Cys Ser Val Gln Ile Leu Val Pro Gly Leu Lys Gly Asp
                 35                  40                  45
Ala Gly Glu Lys Gly Asp Lys Gly Ala Pro Gly Arg Pro Gly Arg
                 50                  55                  60
Val Gly Pro Thr Gly Glu Lys Gly Asp Met Gly Asp Lys Gly Gln
                 65                  70                  75
Lys Gly Ser Val Gly Arg His Gly Lys Ile Gly Pro Ile Gly Ser
                 80                  85                  90
Lys Gly Glu Lys Gly Asp Ser Gly Asp Ile Gly Pro Pro Gly Pro
                 95                 100                 105
Asn Gly Glu Pro Gly Leu Pro Cys Glu Cys Ser Gln Leu Arg Lys
                110                 115                 120
Ala Ile Gly Glu Met Asp Asn Gln Val Ser Gln Leu Thr Ser Glu
                125                 130                 135
Leu Lys Phe Ile Lys Asn Ala Val Ala Gly Val Arg Glu Thr Glu
                140                 145                 150
Ser Lys Ile Tyr Leu Leu Val Lys Glu Glu Lys Arg Tyr Ala Asp
                155                 160                 165
Ala Gln Leu Ser Cys Gln Gly Arg Gly Gly Thr Leu Ser Met Pro
                170                 175                 180
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Lys Asp Glu Ala Ala Asn Gly Leu Met Ala Ala Tyr Leu Ala Gln
                185                 190                 195
Ala Gly Leu Ala Arg Val Phe Ile Gly Ile Asn Asp Leu Glu Lys
                200                 205                 210
Glu Gly Ala Phe Val Tyr Ser Asp His Ser Pro Met Arg Thr Phe
                215                 220                 225
Asn Lys Trp Arg Ser Gly Glu Pro Asn Asn Ala Tyr Asp Glu Glu
                230                 235                 240
Asp Cys Val Glu Met Val Ala Ser Gly Gly Trp Asn Asp Val Ala
                245                 250                 255
Cys His Thr Thr Met Tyr Phe Met Cys Glu Phe Asp Lys Glu Asn
                260                 265                 270
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Ser Leu Glu Met Leu Ser Arg Glu Phe Glu Thr Cys Ala Phe Ser
                35                  40                  45
Phe Ser Ser Leu Pro Arg Ser Cys Lys Glu Ile Lys Glu Arg Cys
                50                  55                  60
His Ser Ala Gly Asp Gly Leu Tyr Phe Leu Arg Thr Lys Asn Gly
                65                  70                  75
Val Val Tyr Gln Thr Phe Cys Asp Met Thr Ser Gly Gly Gly Gly
                80                  85                  90
Trp Thr Leu Val Ala Ser Val His Glu Asn Asp Met His Gly Lys
                95                 100                 105
Cys Thr Val Gly Asp Arg Trp Ser Ser Gln Gln Gly Asn Lys Ala
                110                 115                 120
Asp Tyr Pro Glu Gly Asp Gly Asn Trp Ala Asn Tyr Asn Thr Phe
                125                 130                 135
Gly Ser Ala Glu Ala Ala Thr Ser Asp Asp Tyr Lys Asn Pro Gly
                140                 145                 150
Tyr Tyr Asp Ile Gln Ala Lys Asp Leu Gly Ile Trp His Val Pro
                155                 160                 165
Asn Lys Ser Pro Met Gln His Trp Arg Asn Ser Ala Leu Leu Arg
                170                 175                 180
Tyr Arg Thr Asn Thr Gly Phe Leu Gln Arg Leu Gly His Asn Leu
                185                 190                 195
Phe Gly Ile Tyr Gln Lys Tyr Pro Val Lys Tyr Arg Ser Gly Lys
                200                 205                 210
Cys Trp Asn Asp Asn Gly Pro Ala Ile Pro Val Val Tyr Asp Phe
                215                 220                 225
Gly Asp Ala Lys Lys Thr Ala Ser Tyr Tyr Ser Pro Tyr Gly Gln
                230                 235                 240
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Arg Glu Phe Val Ala Gly Phe Val Gln Phe Arg Val Phe Asn Asn
                245                 250                 255
Glu Arg Ala Ala Asn Ala Leu Cys Ala Gly Ile Lys Val Thr Gly
                260                 265                 270
Cys Asn Thr Glu His His Cys Ile Gly Gly Gly Gly Phe Phe Pro
                275                 280                 285
Gln Gly Lys Pro Arg Gln Cys Gly Asp Phe Ser Ala Phe Asp Trp
                290                 295                 300
Asp Gly Tyr Gly Thr His Val Lys Ser Ser Cys Ser Arg Glu Ile
                305                 310                 315
Thr Glu Ala Ala Val Leu Leu Phe Tyr Arg
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<210> 8
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<213> Homo sapiens

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<212> DNA
<213> Homo sapiens

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<212> DNA
<213> Homo sapiens

<220>
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<211> 1142
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<212> PRT
<213> Homo sapiens

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Gln Val Asp Leu Gln Asn Gly Ser Ser Val Lys Pro Arg Ala Asp
                50                  55                  60
Val Ala Phe His Phe Asn Pro Arg Phe Lys Arg Ala Gly Cys Ile
                65                  70                  75
Val Cys Asn Thr Leu Ile Asn Glu Lys Trp Gly Arg Glu Glu Ile
                80                  85                  90
Thr Tyr Asp Thr Pro Phe Lys Arg Glu Lys Ser Phe Glu Ile Val
                95                 100                 105
Ile Met Val Leu Lys Asp Lys Phe Gln Val Ala Val Asn Gly Lys
               110                 115                 120
His Thr Leu Leu Tyr Gly His Arg Ile Gly Pro Glu Lys Ile Asp
               125                 130                 135
Thr Leu Gly Ile Tyr Gly Lys Val Asn Ile His Ser Ile Gly Phe
               140                 145                 150
Ser Phe Ser Ser Asp Leu Gln Ser Thr Gln Ala Ser Ser Leu Glu
               155                 160                 165
Leu Thr Glu Ile Val Arg Glu Asn Val Pro Lys Ser Gly Thr Pro
               170                 175                 180
Gln Leu Ser Leu Pro Phe Ala Ala Arg Leu Asn Thr Pro Met Gly
               185                 190                 195
Pro Gly Arg Thr Val Val Val Gln Gly Glu Val Asn Ala Asn Ala
               200                 205                 210
Lys Ser Phe Asn Val Asp Leu Leu Ala Gly Lys Ser Lys Asp Ile
               215                 220                 225
Ala Leu His Leu Asn Pro Arg Leu Asn Ile Lys Ala Phe Val Arg
               230                 235                 240
Asn Ser Phe Leu Gln Glu Ser Trp Gly Glu Glu Glu Arg Asn Ile
               245                 250                 255
Thr Ser Phe Pro Phe Ser Pro Gly Met Tyr Phe Glu Met Ile Ile
               260                 265                 270
Tyr Cys Asp Val Arg Glu Phe Lys Val Ala Val Asn Gly Val His
               275                 280                 285
Ser Leu Glu Tyr Lys His Arg Phe Lys Glu Leu Ser Ser Ile Asp
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Thr Leu Glu Ile Asn Gly Asp Ile His Leu Leu Glu Val Arg Ser
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Trp
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<213> Clostridium perfringens

<220>
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<223> GENBANK ID NO: g144861

<400> 16

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Thr Asp Gly Ile Thr Glu Asn Phe Tyr Glu Ile Tyr Pro Lys Pro
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                65                  70                  75
Arg Val Asp Glu Val Leu Glu Ala Ser Asn Leu Glu Ala Thr Val
                80                  85                  90
Ser Asn Glu Ile Val Pro Gly Lys Thr Asn Phe Leu Val Gly Ile
                95                 100                 105
Asn Glu Ser Gly Gly Val Val Asp Asn Tyr Phe Asn Lys Asn Ile
               110                 115                 120
Pro His Asp Glu Ser Phe Phe Asp Glu Lys Met Asp Ala Asn Ile
               125                 130                 135
Val Ser Val Lys Asp Gly Val Ile Gly Val Ile Ala Glu Asp Thr
               140                 145                 150
Asp Ser Ala Phe Tyr Gly Val Thr Thr Leu Lys His Val Phe Asn
               155                 160                 165
Gln Leu Glu Glu Gly Asn Glu Ile Lys Asn Phe Arg Ala Asp Asp
               170                 175                 180
Tyr Ala Glu Val Ala His Arg Gly Phe Ile Glu Gly Tyr Tyr Gly
               185                 190                 195
Asn Pro Trp Ser Asn Glu Asp Arg Ala Glu Leu Met Lys Phe Gly
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Gly Asp Tyr Lys Leu Asn Gln Tyr Val Phe Ala Pro Lys Asp Asp
               215                 220                 225
Pro Tyr His Asn Ser Lys Trp Arg Asp Leu Tyr Pro Glu Glu Lys
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Leu Ser Glu Ile Lys Lys Leu Ala Gln Met Gly Asn Glu Thr Lys
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Asn Arg Tyr Val Tyr Ala Leu His Pro Phe Met Asn Asn Pro Val
               260                 265                 270
Arg Phe Asp Thr Glu Glu Asn Tyr Gln Asn Asp Leu Gly Val Ile
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Lys Ala Lys Phe Thr Gln Leu Leu Glu Asn Asp Val Arg Gln Phe
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Ala Ile Leu Ala Asp Asp Ala Ser Ala Pro Ala Gln Gly Ala Ser
               305                 310                 315
Met Tyr Val Lys Leu Leu Thr Asp Leu Thr Arg Trp Leu Glu Glu
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Gln Gln Ser Thr Tyr Pro Asp Leu Lys Thr Asp Leu Met Phe Cys
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Pro Ser Asp Tyr Tyr Gly Asn Gly Ser Ser Ala Gln Leu Lys Glu
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Asn Asn Ile Ser Thr Glu Gly His Pro Gly Arg Ala Pro Phe Phe
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Trp Ile Asn Trp Pro Cys Ser Asp Asn Ser Lys Gln His Leu Ile
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Met Gly Gly Asn Asp Thr Phe Leu His Pro Gly Val Asp Pro Ser
               425                 430                 435
Lys Ile Asp Gly Ile Val Leu Asn Pro Met Gln Gln Ala Glu Ala
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Asn Lys Ser Ala Leu Phe Ala Ile Ala Asp Tyr Ala Trp Asn Ile
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Lys Tyr Met Asp His Gly Thr Ala Glu Glu Thr Asn Ser Ser Leu
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Ala Leu Arg Glu Ile Ser Lys His Met Ile Asn Gln Asn Met Asp
                500                 505                 510
Gly Arg Val Arg Pro Leu Gln Glu Ser Val Glu Leu Ala Pro Lys
                515                 520                 525
Leu Glu Ala Phe Lys Gln Lys Tyr Asp Ser Gly Ala Ser Ile Lys
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Glu Asp Ala Leu Glu Leu Ile Glu Glu Phe Thr Asn Leu Gln Lys
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Ala Ala Ile Gly Tyr Leu Lys Ser Ala Ile Ala Ile Glu Glu Gly
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Pro Asn Arg Ile Ile Ala Thr Tyr Ile Ser Asn Arg Gln Asp Ala
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Pro Thr Gly Asn Pro Asp Asn Ile Phe Asp Asn Asn Ala Ser Thr
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Glu Leu Val Tyr Lys Asn Pro Asn Arg Ile Asp Val Gly Thr Tyr
                695                 700                 705
Val Gly Val Lys Tyr Ser Asn Pro Ile Thr Leu Asn Asn Val Glu
                710                 715                 720
Phe Leu Met Gly Ala Asn Ser Asn Pro Asn Asp Thr Met Gln Lys
                725                 730                 735
Ala Lys Ile Gln Tyr Thr Val Asp Gly Arg Glu Trp Ile Asp Leu
                740                 745                 750
Glu Glu Gly Val Glu Tyr Thr Met Pro Gly Ala Ile Lys Val Glu
                755                 760                 765
Asn Leu Asp Leu Lys Val Arg Gly Val Arg Leu Ile Ala Thr Glu
                770                 775                 780
Ala Arg Glu Asn Thr Trp Leu Gly Val Arg Asp Ile Asn Val Asn
                785                 790                 795
Lys Lys Glu Asp Ser Asn Ser Gly Val Glu Phe Asn Pro Ser Leu
                800                 805                 810
Ile Arg Ser Glu Ser Trp Gln Val Tyr Glu Gly Asn Glu Ala Asn
                815                 820                 825
Leu Leu Asp Gly Asp Asp Asn Thr Gly Val Trp Tyr Lys Thr Leu
                830                 835                 840
Asn Gly Asp Thr Ser Leu Ala Gly Glu Phe Ile Gly Leu Asp Leu
                845                 850                 855
Gly Lys Glu Ile Lys Leu Asp Gly Ile Arg Phe Val Ile Gly Lys
                860                 865                 870
Asn Gly Gly Gly Ser Ser Asp Lys Trp Asn Lys Phe Lys Leu Glu
                875                 880                 885
Tyr Ser Leu Asp Asn Glu Ser Trp Thr Thr Ile Lys Glu Tyr Asp
```

```
                890                 895                 900
Lys Thr Gly Ala Pro Ala Gly Lys Asp Val Ile Glu Glu Ser Phe
                905                 910                 915
Glu Thr Pro Ile Ser Ala Lys Tyr Ile Arg Leu Thr Asn Met Glu
                920                 925                 930
Asn Ile Asn Lys Trp Leu Thr Phe Ser Glu Phe Ala Ile Val Ser
                935                 940                 945
Asp Glu Leu Glu Ser Ala Gly Asn Lys Glu Asn Val Tyr Thr Asn
                950                 955                 960
Thr Glu Leu Asp Leu Leu Ser Leu Ala Lys Glu Asp Val Thr Lys
                965                 970                 975
Leu Ile Pro Ile Asp Asp Leu Ser Leu Asn His Gly Glu Tyr Ile
                980                 985                 990
Gly Val Lys Leu Asn Arg Ile Lys Asp Leu Ser Asn Ile Asn Leu
                995                1000                1005
Glu Ile Ser Asn Asp Thr Gly Leu Lys Leu Gln Ser Ser Met Asn
               1010                1015                1020

Gly Val Glu Trp Thr Glu Ile Thr Asp Lys Asn Thr Leu Glu Asp
               1025                1030                1035
Gly Arg Tyr Val Arg Leu Phe
               1040
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<210> 17
<211> 97
<212> PRT
<213> Homo sapiens

<220>
<221> misc_feature
<223> GENBANK ID NO: g1247124

<400> 17

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Gly Pro Thr Val Leu Val Ile Cys Gly Pro Gly Asn Asn Gly Gly
  1                 5                  10                  15
Asp Gly Leu Val Cys Ala Arg His Leu Lys Leu Phe Gly Tyr Glu
                 20                  25                  30
Pro Thr Ile Tyr Tyr Pro Lys Arg Pro Asn Lys Pro Leu Phe Thr
                 35                  40                  45
Ala Leu Val Thr Gln Cys Gln Lys Met Asp Ile Pro Phe Leu Gly
                 50                  55                  60
Glu Met Pro Ala Glu Pro Met Thr Ile Asp Glu Leu Tyr Glu Leu
                 65                  70                  75
Val Val Asp Ala Ile Phe Gly Phe Ser Phe Lys Gly Asp Val Arg
                 80                  85                  90
Glu Pro Phe His Val Pro Ser
                 95
```

<210> 18
<211> 457
<212> PRT
<213> Rattus norvegicus

<220>
<221> misc_feature

<223> GENBANK ID NO: g442368

<400> 18

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Met Gln Pro Ala Arg Lys Leu Leu Ser Leu Leu Val Leu Leu Val
  1               5                  10                  15
Met Gly Thr Glu Leu Thr Gln Val Leu Pro Thr Asn Pro Glu Glu
                 20                  25                  30
Ser Trp Gln Val Tyr Ser Ser Ala Gln Asp Ser Glu Gly Arg Cys
                 35                  40                  45
Ile Cys Thr Val Val Ala Pro Gln Gln Thr Met Cys Ser Arg Asp
                 50                  55                  60
Ala Arg Thr Lys Gln Leu Arg Gln Leu Leu Glu Lys Val Gln Asn
                 65                  70                  75
Met Ser Gln Ser Ile Glu Val Leu Asp Arg Arg Thr Gln Arg Asp
                 80                  85                  90
Leu Gln Tyr Val Glu Lys Met Glu Asn Gln Met Lys Gly Leu Glu
                 95                 100                 105
Ser Lys Phe Arg Gln Val Glu Glu Ser His Lys Gln His Leu Ala
                110                 115                 120
Arg Gln Phe Lys Ala Ile Lys Ala Lys Met Asp Glu Leu Arg Pro
                125                 130                 135
Leu Ile Pro Val Leu Glu Glu Tyr Lys Ala Asp Ala Lys Leu Val
                140                 145                 150
Leu Gln Phe Lys Glu Glu Val Gln Asn Leu Thr Ser Val Leu Asn
                155                 160                 165
Glu Leu Gln Glu Glu Ile Gly Ala Tyr Asp Tyr Asp Glu Leu Gln
                170                 175                 180
Ser Arg Val Ser Asn Leu Glu Glu Arg Leu Arg Ala Cys Met Gln
                185                 190                 195
Lys Leu Ala Cys Gly Lys Leu Thr Gly Ile Ser Asp Pro Val Thr
                200                 205                 210
Val Lys Thr Ser Gly Ser Arg Phe Gly Ser Trp Met Thr Asp Pro
                215                 220                 225
Leu Ala Pro Glu Gly Asp Asn Arg Val Trp Tyr Met Asp Gly Tyr
                230                 235                 240
His Asn Asn Arg Phe Val Arg Glu Tyr Lys Ser Met Val Asp Phe
                245                 250                 255
Met Asn Thr Asp Asn Phe Thr Ser His Arg Leu Pro His Pro Trp
                260                 265                 270
Ser Gly Thr Gly Gln Val Val Tyr Asn Gly Ser Ile Tyr Phe Asn
                275                 280                 285
Lys Phe Gln Ser His Ile Ile Ile Arg Phe Asp Leu Lys Thr Glu
                290                 295                 300
Thr Ile Leu Lys Thr Arg Ser Leu Asp Tyr Ala Gly Tyr Asn Asn
                305                 310                 315
Met Tyr His Tyr Ala Trp Gly Gly His Ser Asp Ile Asp Leu Met
                320                 325                 330
Val Asp Glu Asn Gly Leu Trp Ala Val Tyr Ala Thr Asn Gln Asn
                335                 340                 345
Ala Gly Asn Ile Val Ile Ser Lys Leu Asp Pro Val Ser Leu Gln
                350                 355                 360
Ile Leu Gln Thr Trp Asn Thr Ser Tyr Pro Lys Arg Ser Ala Gly
                365                 370                 375
Glu Ala Phe Ile Ile Cys Gly Thr Leu Tyr Val Thr Asn Gly Tyr
                380                 385                 390
Ser Gly Gly Thr Lys Val His Tyr Ala Tyr Gln Thr Asn Ala Ser
                395                 400                 405
```

```
Thr Tyr Glu Tyr Ile Asp Ile Pro Phe Gln Asn Lys Tyr Ser His
                410                 415                 420
Ile Ser Met Leu Asp Tyr Asn Pro Lys Asp Arg Ala Leu Tyr Ala
                425                 430                 435
Trp Asn Asn Gly His Gln Thr Leu Tyr Asn Val Thr Leu Phe His
                440                 445                 450
Val Ile Arg Ser Asp Glu Leu
                455
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<210> 19
<211> 369
<212> PRT
<213> Bos taurus

<220>
<221> misc_feature
<223> GENBANK ID NO: g415939

<400> 19

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Met Leu Leu Leu Pro Leu Ser Val Leu Leu Leu Leu Thr Gln Pro
  1               5                  10                  15
Trp Arg Ser Leu Gly Ala Glu Met Lys Ile Tyr Ser Gln Lys Thr
                20                  25                  30
Met Ala Asn Ala Cys Thr Leu Val Met Cys Ser Pro Pro Glu Asp
                35                  40                  45
Gly Leu Pro Gly Arg Asp Gly Arg Asp Gly Arg Glu Gly Pro Arg
                50                  55                  60
Gly Glu Lys Gly Asp Pro Gly Ser Pro Gly Pro Ala Gly Arg Ala
                65                  70                  75
Gly Met Pro Gly Pro Ala Gly Pro Ile Gly Leu Lys Gly Asp Asn
                80                  85                  90
Gly Ser Ala Gly Glu Pro Gly Pro Lys Gly Asp Thr Gly Pro Pro
                95                 100                 105
Gly Pro Pro Gly Met Pro Gly Pro Ala Gly Arg Glu Gly Pro Ser
                110                 115                 120
Gly Lys Gln Gly Ser Met Gly Pro Pro Gly Thr Pro Gly Pro Lys
                125                 130                 135
Gly Asp Thr Gly Pro Lys Gly Gly Val Gly Ala Pro Gly Ile Gln
                140                 145                 150
Gly Ser Pro Gly Pro Ala Gly Leu Lys Gly Glu Arg Gly Ala Pro
                155                 160                 165
Gly Glu Pro Gly Ala Pro Gly Arg Ala Gly Ala Pro Gly Pro Ala
                170                 175                 180
Gly Ala Ile Gly Pro Gln Gly Pro Ser Gly Ala Arg Gly Pro Pro
                185                 190                 195
Gly Leu Lys Gly Asp Arg Gly Thr Pro Gly Glu Arg Gly Ala Lys
                200                 205                 210
Gly Glu Ser Gly Leu Ala Glu Val Asn Ala Leu Arg Gln Arg Val
                215                 220                 225
Gly Ile Leu Glu Gly Gln Leu Gln Arg Leu Gln Asn Ala Phe Ser
                230                 235                 240
Gln Tyr Lys Lys Ala Met Leu Phe Pro Asn Gly Arg Ser Val Gly
                245                 250                 255
Glu Lys Ile Phe Lys Thr Val Gly Ser Glu Lys Thr Phe Gln Asp
                260                 265                 270
```

```
Ala Gln Gln Ile Cys Thr Gln Ala Gly Gly Gln Leu Pro Ser Pro
                275                 280                 285
Arg Ser Gly Ala Glu Asn Glu Ala Leu Thr Gln Leu Ala Thr Ala
                290                 295                 300
Gln Asn Lys Ala Ala Phe Leu Ser Met Ser Asp Thr Arg Lys Glu
                305                 310                 315
Gly Thr Phe Ile Tyr Pro Thr Gly Glu Pro Leu Val Tyr Ser Asn
                320                 325                 330
Trp Ala Pro Gln Glu Pro Asn Asn Asp Gly Gly Ser Glu Asn Cys
                335                 340                 345
Val Glu Ile Phe Pro Asn Gly Lys Trp Asn Asp Lys Val Cys Gly
                350                 355                 360
Glu Gln Arg Leu Val Ile Cys Glu Phe
                365
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<210> 20
<211> 313
<212> PRT
<213> Mus musculus

<220>
<221> misc_feature
<223> GENBANK ID NO: g3357909

<400> 20

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Met Thr Gln Leu Gly Phe Leu Leu Phe Ile Met Val Ala Thr Arg
  1               5                  10                  15
Gly Cys Ser Ala Ala Glu Glu Asn Leu Asp Thr Asn Arg Trp Gly
                 20                  25                  30
Asn Ser Phe Phe Ser Ser Leu Pro Arg Ser Cys Lys Glu Ile Lys
                 35                  40                  45
Gln Glu His Thr Lys Ala Gln Asp Gly Leu Tyr Phe Leu Arg Thr
                 50                  55                  60
Lys Asn Gly Val Ile Tyr Gln Thr Phe Cys Asp Met Thr Thr Ala
                 65                  70                  75
Gly Gly Gly Trp Thr Leu Val Ala Ser Val His Glu Asn Asn Met
                 80                  85                  90
Arg Gly Lys Cys Thr Val Gly Asp Arg Trp Ser Ser Gln Gln Gly
                 95                 100                 105
Asn Arg Ala Asp Tyr Pro Glu Gly Asp Gly Asn Trp Ala Asn Tyr
                110                 115                 120
Asn Thr Phe Gly Ser Ala Glu Ala Ala Thr Ser Asp Asp Tyr Lys
                125                 130                 135
Asn Pro Gly Tyr Phe Asp Ile Gln Ala Glu Asn Leu Gly Ile Trp
                140                 145                 150
His Val Pro Asn Lys Ser Pro Leu His Asn Trp Arg Lys Ser Ser
                155                 160                 165
Leu Leu Arg Tyr Arg Thr Phe Thr Gly Phe Leu Gln His Leu Gly
                170                 175                 180
His Asn Leu Phe Gly Leu Tyr Lys Lys Tyr Pro Val Lys Tyr Gly
                185                 190                 195
Glu Gly Lys Cys Trp Thr Asp Asn Gly Pro Ala Leu Pro Val Val
                200                 205                 210
Tyr Asp Phe Gly Asp Ala Arg Lys Thr Ala Ser Tyr Tyr Ser Pro
                215                 220                 225
Ser Gly Gln Arg Glu Phe Thr Ala Gly Tyr Val Gln Phe Arg Val
```

```
                230                 235                 240
Phe Asn Asn Glu Arg Ala Ala Ser Ala Leu Cys Ala Gly Val Arg
                245                 250                 255
Val Thr Gly Cys Asn Thr Glu His His Cys Ile Gly Gly Gly Gly
                260                 265                 270
Phe Phe Pro Glu Gly Asn Pro Val Gln Cys Gly Asp Phe Ala Ser
                275                 280                 285
Phe Asp Trp Asp Gly Tyr Gly Thr His Asn Gly Tyr Ser Ser Ser
                290                 295                 300
Arg Lys Ile Thr Glu Ala Ala Val Leu Leu Phe Tyr Arg
                305                 310
```